AP Statistics Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Ch 14&15 CW Date: \_\_\_\_\_\_\_\_\_\_\_ Block: \_\_\_\_

You must show all work and indicate the methods you use. You will be graded on the correctness of your methods and on the accuracy of your final answers. Make sure all notation is done properly!

1. A new clothing store advertises that during its Grand Opening every customer that enters the store can throw a bouncy rubber cube onto a table that has squares labeled with discount amounts. The table is divided into ten regions. Five regions award a 10% discount, two regions award a 20% discount, two regions award a 30% discount, and the remaining region awards a 50% discount.
   1. What is the probability that a customer will get at least a 20% discount? (2)
   2. What is the probability that at least 1 of the next 3 customers will get a 30% discount?(3)
   3. What is the probability that the first 50% discount would be the 6th customer in line? (3)
   4. What is the probability that the three customers in front of you all win the 50% discount? (2)
   5. Suppose the three customers in front of you did all get 50%. The man behind you says, “Wow! You’re lucky to go next. That cube is on a roll!” His wife says, “No he’s not! There’s no way it will come up 50% again.” Who is right in this argument, the husband or the wife? (2)
2. A survey of high school students finds that 43% are involved in school sports, 28% take AP courses, and 12% are involved in sports and take AP courses.
   1. Draw the Venn Diagram (3)
   2. What is the probability a high school student selected at random isn’t involved in sports but takes AP courses? (2)
   3. What is the probability that a high school athlete doesn’t take AP courses? (3)
   4. What is the probability an AP student plays a school sport? (3)
   5. Are taking AP courses and playing a sport disjoint? Explain. (2)
   6. Are taking AP courses and playing a sport independent? Explain. (2)

|  |  |  |
| --- | --- | --- |
|  | **Jeans?** | |
|  | **Yes** | **No** |
| **Male** | 12 | 5 |
| **Female** | 8 | 11 |

1. A random survey of high school students looked at the student’s sex and whether or not they were wearing jeans. The following two-way table shows the results.
   1. What is the probability that a randomly selected student is wearing jeans? (2)
   2. What is the probability that a randomly selected student is male and wearing jeans? (2)
   3. What is the probability that a randomly selected student is a female or wearing jeans? (3)
   4. What is the probability that a student is wearing jeans given they are a male?(3)
   5. What is the probability that a female wasn’t wearing jeans? (3)
   6. Does it appear that wearing jeans is independent of being male? Explain. (3)
2. Assume that 70% of students study for their Statistics Final Exam. Of those that study 95% pass the final. Of those that don’t study only 60% pass the final.
   1. Draw a tree diagram for this situation. (6)
   2. What is the probability that a randomly selected student doesn’t pass the final exam? (3)
   3. What is the probability that a student that passed the exam studied? (3)